

Characteristic	Challenger	Explorer	Sedco 472 ^a
Length	193 m	190 m	145 m
Bow	20 m	96 m	29 m
Operating draft	7 m	9 m	8 m
Operating displacement	9,000 tonnes	40,000 tonnes	15,100 tonnes
Speed	22 km h ⁻¹	19 km h ⁻¹	26 km h ⁻¹
Crew capacity	45	55	55
Scientific crew capacity	29	60	50
Quarters	74	150	116
Livability rating	poor	excellent	fair-good
Drill string capacity	7,100 m	10,200 m	9,200 m
Heave compensation	good	good	good
Mud/cement systems	limited	good	good
Casing storage	limited	good	good
Riser and blow-out prevention	none	maybe someday ^b	1,800+ m
Weather limits for drilling	unknown, but less than other	83 km h ⁻¹ wind, 5/8 km in seas, 4.5 km h ⁻¹ current	83 km h ⁻¹ wind, 5/8 km in seas, 4.5 km h ⁻¹ current
Sea keeping capacity	ships	current	current
High latitude capability	good	excellent	good+
Laboratory space	426 m ²	1,800 m ²	852 m ²

Source: NSF Office of Scientific Ocean Drilling.

^a For comparative purposes only; a request for proposals would be issued for bidding from commercial drilling companies if the administration acts on the ad hoc group's recommendation.

^b The *Glamor Explorer* has the capacity to carry 4,000 m of riser string.

• advise, within the framework of these priorities, on the relative merits of the *Glamor Challenger*, the *Glamor Explorer*, and a third drilling platform

• consider what mix of research programs and associated facilities, within constrained budgets, will best address the scientific opportunities in crustal research.

The final report of the group is expected within two months.

The members of the NSF Ad Hoc Advisory Group on Crustal Studies are Donald L. Anderson (Geophysics Department, California Institute of Technology); W. Edward Bingham (drilling engineer advisor, Shell Oil Company); Kevin C. Burke (Department of Geological Sciences, State University of New York at Albany); William R. Dickinson (Department of Geosciences, University of Arizona in Tucson); Charles L. Drake (Department of Earth Sciences, Dartmouth College); Myron K. Horn (Cities Service Company, Tulsa, Okla.); John Hower (Department of Geology, University of Illinois, Urbana); John Imbro (Department of Geological Sciences, Brown University); John A. Knauth (School of Oceanography, University of Rhode Island,

Jackson); Jack E. Oliver (Department of Geological Sciences, Cornell University); Cecil B. Raleigh (Lamont-Doherty Geological Observatory); Robert H. Rutford (University of Texas at Dallas); Eugen Seibold (Deutsche Forschungsgemeinschaft); and Derek Spencer (Woods Hole Oceanographic Institute); and Francis G. Stell (College of Geosciences, University of Oklahoma in Norman). —BTR

Wet January for Nation's Streams

The nation's streamflow picture was generally wetter than usual in January, except in the East, according to a check by the U.S. Geological Survey (USGS), Department of the Interior.

USGS hydrologists said that more than 80% of the key index gaging stations across the country reported average or above-average streamflow during January. Of the stations reporting below average streamflow, most were in the eastern part of the country, with small, dry areas reported in Kansas, Nebraska, Texas, and Ohio. In the eastern United States—from Maine south to Florida and west to Pennsylvania and Tennessee—21 of the 66 key index stations reported streamflow that was much below average for the month, within the lower 25% of record.

Reflecting the generally wet picture in the country, combined flow of the nation's "Big Five" rivers—Mississippi, St. Lawrence, Columbia, Missouri, and Ohio—averaged 1,021 billion gallons a day (bpd), 40% above average for the month. The combined flow is down about 15% from the December average, as major floods receded in Illinois, Arkansas, Louisiana, Missouri, and Mississippi. January was the eighth straight month that the combined flow of the "Big Five" was above average.

Since the "Big Five" rivers drain more than half of the conterminous United States, USGS hydrologists use their flow as a convenient guide to the condition of the nation's water resources.

BIG FIVE: Individual January flows—Mississippi River near Vicksburg, Miss., 677 bpd, 66 percent above average, but 9 percent below December; St. Lawrence River near Massena, N.Y., 150 bpd, within 1 percent of average, but down 14 percent from last month; Ohio River at Louisville, Ky., 61 bpd, 38 percent below average, down 39 percent from December; Missouri River at Hermann, Mo., 51 bpd, 196 percent above average, but still down 57 percent from the previous month; and the Columbia River at The Dalles, Ore., 82 bpd, 47 percent above average and 16 percent above December.

Forum

The Uses of Color

Color graphics in AGU publications may be valuable aids to communication, but care will have to be taken to assure that they really contain extra information instead of the same old information in a lesser package. (I once told me, for example, why the essentially monochrome, yellow red blue false color image on the cover of *EOS*, December 7, 1982, contains more information than a good black and white version?!

Further, any graphical display, whether in color or not, ought to be described in complete, understandable terms. The caption to the cited cover of *EOS* was, I found, confusing in the original version in *Geophysical Research Letters* (Vol. 9, No. 12, 1982), so I lettered a "translation" for the interested reader. The excerpted caption in *EOS* is all more confusing for lack of context and illustrates the dangers of excepting without editing.

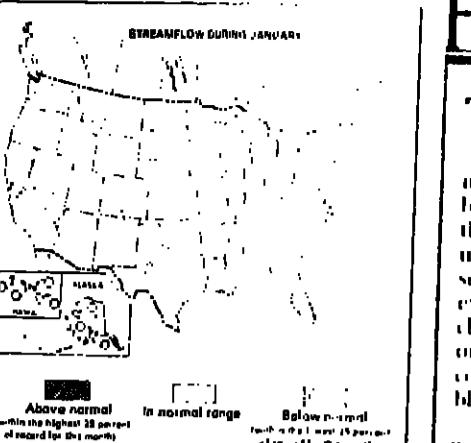
The theta image of the earth's aurora seen from space is a startling and beautiful discovery, and its finders are to be congratulated. But they should pay due attention (as should we all) to the ordinary meaning of words. Geophysicists should strive to write so clearly that even when their words are lifted out of context for the elucidation of the masses, they are still meaningful. *EOS* readers should not have to go to great lengths to find significance in what is otherwise merely a pretty picture.

GRL original (vol. 9, p. 1003): The apparent position of the DE-2 orbit corresponds to the central vertical scan line of the image.

Translation: The track of the DE-2 orbit is represented by the time abscissa in this Plate is shown on Figure 1.

Note also that the sentence in the GRL caption beginning "Spacecraft motion" belongs to Figure 1 and Plate 1, not Plate 2.

S. A. More
Department of Geology and Geography
University of Massachusetts



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There are no discounts or commissions on classified ads. Any type that is not publisher's choice is charged for at general advertising rates. *EOS* is published weekly on Tuesday. Ads must be received in writing on Monday, 1 week prior to the date of publication.

Replies to ads with box numbers should be addressed to Box —, American Geophysical Union, 2000 Florida Avenue, N.W., Washington, D.C. 20009.

For further information or to place an ad call toll free 800-424-2488 or 402-6905 in the Washington, D.C. area.

POSITIONS AVAILABLE

Assistant Research Oceanographer/SIO. The Ocean Research Division of Scripps Institution of Oceanography invites applications for the position of Assistant Research Oceanographer. The successful applicant will be responsible for the organization and execution of oceanic turbulence measurements as well as the interpretation and reporting of the obtained data.

The position requires a Ph.D. or equivalent in physical oceanography. 3 years of postdoctoral experience with oceanic measurements and data interpretation. The Scripps Turbulence Laboratory is actively engaged in the research and interpretation of oceanic turbulence data from a variety of environments obtained with several types of vehicles. The successful candidate will be expected to contribute to the growth and development of the scope of the research performed by the laboratory.

Applicants should send a resume, statement of research interests and the names of at least three references to Prof. Thomas R. O'Brien, Code 6500, Naval Postgraduate School, Monterey, CA 93943.

Applications will be considered until March 15, 1983. Applicants should provide a curriculum vitae, three professional references, and a statement of professional research and instructional goals. Send letters of application to Prof. Christopher N. K. Mooers, Chairman, Department of Oceanography, Naval Postgraduate School, Monterey, CA 93943. Phone: (408) 646-2572/2573.

• Equal Opportunity/Affirmative Action Employer.

Postdoctoral Research Associate Mineralogy. Applications are invited for research in high-resolution and analytical transmission electron microscopy of minerals and their analogues. Experience in crystallography, materials sciences, or electron microscopy is desirable. Send resume including transcript, statement of research interests, and names of three references to Dr. P. R. Buseck, Department of Geology, Arizona State University, Tempe, AZ 85287. ASU is an EO/AA employer.

• Equal Opportunity/Affirmative Action Employer.

Position in Petrology/Rice University, Houston, Texas. The Department of Geology has a tenure-track opening beginning July 1983 with starting level of appointment depending on the experience of the candidate. The faculty member is expected to establish, or contribute to a vigorous research program in petrology and to contribute in teaching in upper-level undergraduate courses. Three professional interests are potentially interested include: igneous petrology, metamorphic petrology, or deposition, experimental petrology, interactions of fluids with rocks and sediments, isotope geochemistry, but other specialties are not excluded from consideration. Available research facilities of the Department include: electron microscopes, electron microprobe, Ar-Ar dating, and stable isotope mass spectrometry. Send curriculum vitae, a statement of planned research, and names of at least three references to Dr. A. W. Bally, Chairman, Department of Geology, Rice University, P.O. Box 1892, Houston, Texas 77251.

Rice is an equal opportunity employer.

Position in Petrology/Rice University, Houston, Texas. The Department of Geology has a tenure-track opening beginning July 1983 with starting level of appointment depending on the experience of the candidate. The faculty member is expected to establish, or contribute to a vigorous research program in petrology and to contribute in teaching in upper-level undergraduate courses. Three professional interests are potentially interested include: igneous petrology, metamorphic petrology, or deposition, experimental petrology, interactions of fluids with rocks and sediments, isotope geochemistry, but other specialties are not excluded from consideration. Available research facilities of the Department include: electron microscopes, electron microprobe, Ar-Ar dating, and stable isotope mass spectrometry. Send curriculum vitae, a statement of planned research, and names of at least three references to Dr. A. W. Bally, Chairman, Department of Geology, Rice University, P.O. Box 1892, Houston, Texas 77251.

• Equal Opportunity/Affirmative Action Employer.

Research Associate in Theoretical Plasma Astrophysics. Applications are invited for a postdoctoral research associate in theoretical plasma astrophysics, space plasma physics and/or cometary plasma physics. The successful applicant will be responsible for the organization and execution of research projects in the field of plasma astrophysics. Applications will be considered until April 1, 1983. A competitive salary will be offered.

Applicants should send a resume, statement of research interests and the names of at least three references to Prof. J. R. Johnson, Department of Geosciences, University of Arizona, Tucson 85721.

• Equal Opportunity/Affirmative Action Employer.

Research Associate in Upper Atmospheric Physics. The National Research Council (NRC) is building a multi-instrument ground-based research facility called CANOPUS. One part of CANOPUS is the Canadian Atmospheric Network, which will provide interactive access to CANOPUS data by scientists across Canada. A research associate will provide a curriculum vitae, three professional references, and a statement of professional research and instructional goals. Send letters of application to Prof. Christopher N. K. Mooers, Chairman, Department of Geology, University of Montana, Missoula, MT 80122.

The deadline for applications is March 15, 1983. The University of Montana is an affirmative action/equal opportunity employer.

Postdoctoral Position/Selenology. Postdoctoral support in selenology is tentatively available for up to 24 months. Seeking a recent Ph.D. with interest in regional selenology, including data analysis, data base management, numerical modeling, and related topics; and love computation of problems in physical selenography, especially those pertaining to satellite selenimetry. Students are primarily from the Defense Mapping Agency, Naval Oceanographic Office, NOAA Corps, and U.S. and allied navies.

An academic or professional background in marine geology, mineral geophysics, or dynamical oceanography has allowed me to see the dynamic part AGU played in the growth and development.

The book is organized into seven parts.

1. Mathematical and Physical Basis of Climate (five lectures), in which a general survey of the principal aspects of climate change and of some of the mechanisms involved is

2. Mathematical Techniques in Climate Reconstruction and Data Banks (three lectures), in which information is supplied on the statistical methods and other tools used to analyze

3. Facts: Reconstruction of Past Climates (10 lectures), the longest of all parts. Here, long and intermediate scale climatic changes are described as they appear in the light of experimental work using oxygen isotopes, ice cores, and other techniques. Moreover, a number of case studies is presented on recent climatic anomalies, and the role of atmospheric circulation and air-sea interactions is examined in this context.

4. Theories of Climatic Variations and Their Modeling (nine lectures). Possible factors at the origin of climatic change are analyzed, and numerous suggestions are made on the role of internal mechanisms (feedbacks etc.) and external forcings (orbital variations, solar output, etc.). Moreover, a number of mathematical models are developed, which are suitable for the analysis of different situations arising in the context of climatic change. Special emphasis is laid on energy balance (Ghil) and statistical (Hasselmann) models, but a general overview of other approaches including general circulation models is provided in a chapter by Gates.

5. Man's Impact on Climate (six lectures). Most of this part is devoted to the carbon dioxide problem. Some general considerations on air pollution are also presented.

6. Climate Impacts on Man (two lectures). This short part deals with the impact of climatic variability on agricultural and other resources, as well as on economy.

Joseph W. Lang

Note: The above letter came from one of AGU's life members, whose contribution gives him the status of Individual Supporting Member.

A Life Supporting Member recently wrote to us that although raising money is not his bag, he feels we are doing some good and gladly supports our work. His reason for supporting us is that 20 years ago AGU supported the early development of isotope geology and at that time the Union never asked for anything. Now he feels that because he benefited from AGU's earlier initiatives, his present support seems reasonable.

Have you remembered what AGU has done for you lately or perhaps even long ago?

Charles A. Whited
Earl G. Droege
Cochairmen, GIFT Steering Committee

Climatic Changes
ISBN 0-87590-206-5
M.I. Budyko
English Trans., R. Zolna
English Trans., editor, L. Levin (1977)

The application of physical climatology in studying climatic changes is the main problem presented in this book.

Budyko also deals with the effect of climatic changes on biological processes including the evolution of living organisms. He presents the need to develop methods, and offers suggestions, for controlling climate modifications.

Books

Climate Variations and Variability: Facts and Theories

A. Berger (Ed.), *NATO Adv. Study Inst. Ser. C, Math. and Phys. Sci.*, vol. 72, D. Reidel, Hingham, Mass., xxvi + 795 pp., 1981.

Reviewed by C. Nicolis

Ever since the realization, about 20 years ago, that the mild and predictable climate of the first half of our century was an anomaly within the climate's long and turbulent history, specialists, policy makers, and the general public feel increasingly concerned about the possible impacts of climatic change on an

over populated and energy-thirsty society. Yet for all its importance, the share of this field in modern scientific literature is surprisingly slim. In this respect, the present book, which compiles the lectures given at the first International School of Climatology organized under the auspices of Eutore Majorana Center and NATO at Erice, Italy, in March 1980 constitutes a welcome contribution.

A number of monographs and proceedings volumes on various aspects of climate are available. There is no doubt, however, that the present contribution gives a more comprehensive view of the subject, both broader and deeper than the previously available reviews.

The book is organized into seven parts.

1. Mathematical and Physical Basis of Climate (five lectures), in which a general survey of the principal aspects of climate change and of some of the mechanisms involved is

2. Mathematical Techniques in Climate Reconstruction and Data Banks (three lectures), in which information is supplied on the statistical methods and other tools used to analyze

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Experimental & Solar Physicists

Lockheed Missiles and Space Company's Research Laboratory in Palo Alto, CA, has openings for a SOLAR PHYSICIST and an EXPERIMENTAL OPTICAL AERONOMY PHYSICIST in our Space Sciences Laboratory. These Labs are located on the beautiful San Francisco Peninsula just minutes south of Stanford University.

Solar Physicist

The successful applicant will be expected to conduct and publish original research on solar flares as a member of the Lockheed X-Ray Polychromator (XRP) team. This research WILL make use of existing XRP and related data or new observations to be acquired following the repair of the Solar Maximum Mission (SMM) in 1984. As an active member of the XRP team, this physicist will participate in planning and executing the observing program of the renewed XRP and SMM.

This position requires a PhD degree or its equivalent plus experience in solar research. A background in plasma physics is highly desirable.

Both of these appointments and salary levels will be commensurate with the credentials of the person selected. Qualified and interested candidates should send their resumes, references and list of publications to: LMSC, Professional Employment, Dept. 600-0215, P.O. Box 504, Sunnyvale, CA 94086. Lockheed is an equal opportunity, affirmative action employer. U.S. CITIZENSHIP IS REQUIRED.

Lockheed Missiles & Space Company

Atmospheric Scientist/Programmer/University of Nevada System. The Deep Research Institute has an opening for an Atmospheric Scientist/Programmer within the Atmospheric Scientist/Programmer individual will take part in the processing, analysis, and interpretation of aircraft cloud physics data and data collected with radar, radiometer, and lidar remote sensing instruments in cloud physics and weather modification research projects. Initial emphasis will be on developing and integrating graphics data display capabilities in DPL. Research will then shift to data analysis and interpretation and publication of results. Opportunities exist for developing own research projects. Desirable qualifications include a PhD in atmospheric sciences with 2 to 3 years experience in computer-assisted aircraft and/or remote sensing data display and analysis. Strong candidates with the M.S. degree in atmospheric sciences or related fields of physical science with extensive relevant experience will also be considered and are encouraged to apply. The salary will be attractive and is negotiable, full benefit package. Send a brief letter of application, a complete resume, names of three references of education and experience, and names, addresses and telephone numbers of three individuals who can speak knowledgeably about your capabilities, postmarked by April 1, 1983, to Mrs. Harrison, Personnel Office, Desert Research Institute, University of Nevada System, P.O. Box 8020, Reno, Nevada 89505.

An Affirmative Action/Equal Opportunity Employer.

Isotope Geologist/University of Wyoming. The Department of Geology/Geophysics invites applications for a tenure-track position at the assistant professor level in isotope geology. The applicant's field of specialty may be stable isotope geochemistry. The successful candidate will be expected to teach undergraduate and graduate courses and conduct his/her own research program. Consideration will be given to candidates in earth science, geochemistry, marine sedimentology, and other disciplines. The University of Wyoming is an equal opportunity/affirmative action employer.

Faculty Position/University of Wyoming. The Department of Geology/Geophysics invites applications for a tenure-track position at the assistant professor level in isotope geology. The applicant's field of specialty may be stable isotope geochemistry. The successful candidate will be expected to teach undergraduate and graduate courses and conduct his/her own research program. Consideration will be given to candidates in earth science, geochemistry, marine sedimentology, and other disciplines. The University of Wyoming is an equal opportunity/affirmative action employer.

Postdoctoral Position in Dynamical Meteorology. The Department of Atmospheric Sciences at the University of Washington is seeking a research position for work on problems of large-scale dynamics and transport in the stratosphere and mesosphere. The successful applicant should have demonstrated capability in diagnostic studies of atmospheric circulation and/or in dynamical theory and modeling. Position is for one year with possibility of extension to three years and begins about July 1, 1983. Candidates should send curriculum vitae and three letters of reference to:

Prof. Conway B. Leovy

Department of Atmospheric Sciences AK-40

University of Washington

Seattle, WA 98195.

For information phone 206/543-2692.

The University of Washington is an affirmative action/equal opportunity employer.

Postdoctoral Fellowship, Iberian Petroleum/University of New Mexico. The Institute of Meteorology, Department of Geology, has an opening for a postdoctoral fellow in igneous petrology to work on our large sample. Main thrust of the research will be direct petrography of brecciated and pristine lunar highland rocks. Close interaction with other Institute and students working on lunar samples and meteorites is expected. Experience in electron microprobe and/or neutron activation analysis desirable but not essential. Position open on or about July 1, 1983. Application for initial 1 year, with renewal possible. Send resume, list of publications and 3 letters of reference by May 1, 1983 to K. Keil, Director, Institute of Meteorites, Department of Geology, University of New Mexico, Albuquerque, NM 87131.

An Affirmative Action/Equal Opportunity Employer.

The University of New Mexico is an equal opportunity affirmative-action employer.

76

Experimental Physicist

A position in experimental optical aeronomy is currently open where the candidate is expected to carry out experimental/observational programs in auroral and airglow physics using ground based, airborne and spacecraft based optical instruments. This physicist will participate in existing programs, become involved in the development of data-reduction techniques for analyzing photometric spectroscopic and imaging data and eventually be expected to develop one's own interests in research programs. A PhD in physics, space physics or a related discipline, the experience in scientific data analysis, the development of space hardware and the involvement in satellite, rocket or shuttle programs is essential. A willingness to travel to remote sites will be required.

Both of these appointments and salary levels will be commensurate with the credentials of the person selected. Qualified and interested candidates should send their resumes, references and list of publications to: LMSC, Professional Employment, Dept. 600-0215, P.O. Box 504, Sunnyvale, CA 94086. Lockheed is an equal opportunity, affirmative action employer. U.S. CITIZENSHIP IS REQUIRED.

Assistant Research Geologist. Scripps Institution of Oceanography has a position available for research in various fields of geochemistry including sampling of submarine hydrothermal vent systems in the ocean floor field in volcanic areas on land and at sea level starting in the fall of 1983. Applicants have worked on the Greenland Ice Cap drilling and sampling for the last 2 years. Laboratory work on isotopic and chemical studies of ice is required. Starting salary is \$22,800; starting date is April 1983. An initial two-year appointment is envisaged. Research publications: Experience in the submersible RV A/VIN sampling hydrothermal vent fluids; experience in high-temperature, fast-rate sampling in volcanic gas and water; stable isotope, geochemistry, mass spectrometer isotope studies; high voltage techniques; and a PhD in geology and/or geochemistry. Send resume and three references to H. C. Cox, Geological Research Division, A-020, Scripps Institution of Oceanography, La Jolla, California 92093, by April 1, 1983. Note: Material sent to arrive at SIO after March 1, 1983, will be addressed to Ms. Jayne Moore at the above address. H. Craig, RV MELVILLE, Papeete, Tahiti.

The University of California, San Diego, is an equal opportunity/affirmative action employer.

Faculty Position/University of Wyoming. The Department of Geology/Geophysics invites applications for a tenure-track assistant professor level in isotope geochemistry. The applicant's field of specialty may be stable isotope geochemistry. The successful candidate will be expected to teach undergraduate and graduate courses and conduct his/her own research program.

Consideration will be given to candidates in earth science, geochemistry, marine sedimentology, and other disciplines. The University of Wyoming is an equal opportunity/affirmative action employer.

Faculty Position/University of Wyoming. The Department of Geology/Geophysics invites applications for a tenure-track position at the assistant professor level in isotope geochemistry. The applicant's field of specialty may be stable isotope geochemistry. The successful candidate will be expected to teach undergraduate and graduate courses and conduct his/her own research program.

Consideration will be given to candidates in earth science, geochemistry, marine sedimentology, and other disciplines. The University of Wyoming is an equal opportunity/affirmative action employer.

Postdoctoral Research Associate Positions/Johns Hopkins University Applied Physics Laboratory. Positions are available for both visiting and tenure-track faculty at all levels starting in the fall of 1983. Applicants must have strong teaching and research interests in one or more of three areas in the Department: Atmospheric Sciences, Geomagnetism, Satellite Meteorology, and Remote Sensing of the Atmosphere.

EXPERIMENTAL PHYSICS—biophysics, quantum optics, nuclear and solid state physics;

THEORETICAL PHYSICS—atomic, molecular and nuclear physics, quantum optics and nonlinear

physics.

Interested persons should send resumes and the names, addresses, and telephone numbers of three references to:

Dr. Hernan Newstein, Acting Head, Department of Physics and Atmospheric Science, Drexel University, Philadelphia, PA 19104

(215) 805-2707.

Drexel University is an equal opportunity and affirmative action employer.

Faculty Position/Department of Geology, University of Illinois Urbana-Champaign. Applications are solicited for a tenure-track assistant professor position in experimental rock physics. The position is open to all areas of rock physics. The position will be filled by the end of August, 1983. Salary is open depending upon experience. We are seeking a creative individual who can either in either basic or applied research develop a vigorous research program. An earned PhD is required. The Department of Geology, the Materials Research Laboratory and the Engineering College of the University together offer excellent research facilities for rock physics studies. For equal considerations, interested individuals should submit their curriculum vitae, list of publications, research interests and the names of three or more references by June 15, 1983 to:

Albert T. Hsu

Department of Geology, University of Illinois at Urbana-Champaign

1901 West Green Street

Urbana, Illinois 61801

217-333-7732.

University of Illinois is an equal opportunity/affirmative action employer.

Postdoctoral Position in Dynamical Meteorology. The Department of Atmospheric Sciences at the University of Washington is seeking a research position for work on problems of large-scale dynamics and transport in the stratosphere and mesosphere. The successful applicant should have demonstrated capability in diagnostic studies of atmospheric circulation and/or in dynamical theory and modeling. Position is for one year with possibility of extension to three years and begins about July 1, 1983. Candidates should send curriculum vitae and three letters of reference to:

Prof. Conway B. Leovy

Department of Atmospheric Sciences AK-40

University of Washington

Seattle, WA 98195.

For information phone 206/543-2692.

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Postdoctoral Fellowship, Iberian Petroleum/University of New Mexico. The Institute of Meteorology, Department of Geology, has an opening for a postdoctoral fellow in igneous petrology to work on our large sample. Main thrust of the research will be direct petrography of brecciated and pristine lunar highland rocks. Close interaction with other Institute and students working on lunar samples and meteorites is expected. Experience in electron microprobe and/or neutron activation analysis desirable but not essential. Position open on or about July 1, 1983. Application for initial 1 year, with renewal possible. Send resume, list of publications and 3 letters of reference by May 1, 1983 to K. Keil, Director, Institute of Meteorites, Department of Geology, University of New Mexico, Albuquerque, NM 87131.

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The University of New Mexico is an equal opportunity affirmative-action employer.

76

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To apply send a vita with list of publications, summary of present and proposed research and names of three references to: Kenneth A. Erikson, Chairman of Search Committee, Department of Geophysical Sciences, VPI & SU, Blacksburg, VA 24061.

An Affirmative Action/Equal Opportunity Employer.

The University of New Mexico is an equal opportunity affirmative-action employer.

76

Physical Oceanographer/Computer Programer. The Florida State University is seeking applicants to help carry out advanced research that involves numerical modeling and time series analysis. Candidates should have an M.S. in physical oceanography or computer science and experience with principles of ocean circulation modeling and oceanographic data processing. Experience on CDC mainframe plus Fortran IV is desirable. Duration available to start immediately. Apply to Research Assistant. Salary will be competitive according to training and experience. Send resume and professional references by March 28, 1983 to Y. Hsueh, Department of Oceanography, Florida State University. An affirmative action/equal opportunity employer.

How to apply: Candidates should submit a letter of intent, a curriculum vitae, and three letters of recommendation.

The letter of intent should include a statement of what fellowship is desired, how you qualify for it, what issues are of interest to you, what role you would like to play in a congressional science fellow, and what potential exists for a relation to career goals. The individuals from whom you request letters of recommendation should discuss not only your professional competence, but also other aspects of your background that make you particularly qualified to serve as a Congressional Science Fellow.

Send the above to: Department MP, Congressional Science Fellowship Program, American Geophysical Union, 2000 Florida Avenue, N.W., Washington, D.C. 20009.

Application Deadline: March 31, 1983.

Graduate Scholarships in Geophysics/University of Wyoming and Chevron Fellowships

Individuals are invited to apply. A broad background in science is expected. The various duties entailed require the applicant to be articulate, literate, flexible, and able to work well with people from diverse professional backgrounds.

Public policy background is not required although such experience and/or demonstrable interest in applying science to the solution of public problems is desirable.

The fellowship carries with it a stipend of up to \$27,000 plus travel allowances.

Graduate Scholarships in Geophysics/University of Wyoming

Individuals are invited to apply. A broad background in science is expected. The various duties entailed require the applicant to be articulate, literate, flexible, and able to work well with people from diverse professional backgrounds.

Public policy background is not required although such experience and/or demonstrable interest in applying science to the solution of public problems is desirable.

The fellowship carries with it a stipend of up to \$27,000 plus travel allowances.

Graduate Fellowships in Coastal and Continental Shelf Sedimentation. The Geology Department of Dalhousie University invites applications for graduate fellowships leading to M.Sc. and Ph.D. degrees with specialization in the field of coastal and continental shelf sedimentation. Potential research areas include shoreface, and sediment processes, instrumentation, and research programs and studies and construction of coastal structures. Opportunities exist to take part in the upcoming Canadian Coastal Sediment Study and to gain scientific cruise experience on research vessels from Bedford Institute of Oceanography. Awards cover a calendar year suspended and air valued, after fees are deducted, between \$6500-\$8000. For further information or application please write:

Dr. R. Boyd, Geology Department, Dalhousie University, Halifax, Nova Scotia, Canada B3H 3J5.

Invited and Contributed Papers

Abstract Deadline: March 15, 1983

Further Information: Jupiters/Saturn Conference

c/o Prof. H. S. Bridge, 37-241, Massachusetts Institute of Technology, Cambridge, MA, 02139, (617) 253-7501.

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